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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/706,571	11/12/2003	Robert D. Brown	02FD056/KE	6660

7590 01/19/2005
ROCKWELL COLLINS, INC.
Attention: Nathan O. Jensen M/S 124.323
400 Collins Rd. NE
Cedar Rapids, IA 52498

EXAMINER

THOMPSON, TIMOTHY J

ART UNIT PAPER NUMBER

2873

DATE MAILED: 01/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/706,571

Applicant(s)

BROWN ET AL.

Examiner

Timothy J Thompson

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-11, 13-17, 19 and 20 is/are rejected.
- 7) ☒ Claim(s) 6, 12 and 18 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 7-11, 13-17, 19, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalmanash et al.(U.S. Patent Pub. No. 2003/0128427) in view of Chiu et al.(U.S. Patent No. 5,777,789) and Stephens (U.S. Patent No. 5,059,917).

Regarding claim 1, 8, Kalmanash et al. discloses; a first light source(fig 1, lamp 1), a second light source configured to emit light when the first light source is not emitting light(fig 1, lamp 2), a polarizing element that accepts light from the first and second light sources and emits, along a light path, light from the first light source with a first polarization orientation, and wherein the polarizing element emits, along the light path, light from the second light source with a second polarization orientation(fig 1, PBS), and a polarization rotator that receives light from the homogenizing element and selectively rotates one of the first and second polarization orientations to ensure light emitted therefrom maintains a constant polarization orientation(fig 1, rotator). Kalmanash et al. does not disclose a homogenizing element that receives and homogenizes polarized light from the polarizing element. However, Chiu et al. discloses a light pipe homogenizes the light passing through it(col 2, lines 15-25) and Stephens discloses a rectangular

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homogenizing element(light pipe) that additionally preserves the polarization of the light passing thorough the light pipe(fig 4, 38). It would have been obvious to one skilled in the art at the time of the invention to use a homogenizing element as shown by Stephens, in light of Chiu et al., in the projection system of Kalmanash et al., since as shown by of Stephens, in light of Chiu et al., homogenizing elements are commonly used in projection systems for providing a spatially uniform plane of illumination.

Regarding the positioning of the homogenizer, it would have been obvious to place the homogenizer after the beam splitter since this would require the use of only one homogenizer to homogenize the light, as opposed to two homogenizers if the homogenizer where placed before the beam splitter thus reducing the cost of the optical system. Additionally, *In re Japikse*, 86 USPQ 70, held that rearrangement of parts in an invention involves only routine skill in the art. Additionally, Umemoto discloses that a light pipe homogenizes light

Regarding claim 2, Kalmanash et al. discloses; the first light source(fig 1, lamp 1) is positioned such that light emitted therefrom is collinear to the light path(fig 1).

Regarding claim 3, Kalmanash et al. discloses the second light source(fig 1, lamp 2) is positioned such that light emitted therefrom enters the polarizing element in a direction odhogonal to the light path(fig 1).

Regarding claim 4, Kalmanash et al. discloses the polarizing element(fig 1, PBS) is a polarization beam splitter having first and second faces, and wherein light from the first light source enters the first face and light from the second light source enters the second face(fig 1).

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Regarding claim 5, The light pipe of Stephens incorporated into the optical system of Kalmanash et al., discloses that the homogenizing element substantially preserve the first and second polarization orientations(col 5, line 55 through col 6, line 25).

Regarding claim 7, 9, Kalmanash et al. discloses a sensor operationally connected to the first light source, the sensor detecting an operational state of the first light source, wherein the illumination system is configured to activate the second light source when the sensor detects a failure of the first light source(fig 4, 66).

Regarding claim 10, Kalmanash et al. discloses a controller that, in a normal mode, controls the first light source to be activated, the second light source to be deactivated, and the polarization rotator(para 0013-0017).
to be in a first rotation state.

Regarding claim 11, Kalmanash et al. discloses in response to a signal from the sensor indicating a failure of the first light source, controls the second light source to be activated and the polarization rotator to be in a second rotation state(para 0013-0017).

Regarding claim 13, The light pipe of Stephens incorporated into the optical system of Kalmanash et al., discloses that the homogenizing element is rectangular in shape(col 7, lines 49-68).

Regarding claim 14, The light pipe of Stephens incorporated into the optical system of Kalmanash et al., discloses that the homogenizing element is square in shape(col 5, line 55).

Regarding claim 15, Kalmanash et al. discloses actuating a first light source to emit light; polarizing the light from the first light source to have a first polarization orientation, actuating a second light source to emit light when the first light source is not emitting light; polarizing the light from the second light source to have a second polarization orientation, alternately directing, through a light pipe, the light having the first polarization orientation and the light having the second polarization orientation', maintaining the first polarization orientation while the light from the first light source is in the light pipe; maintaining the second polarization orientation while the light from the second light source is in the light pipe, and rotating one of the first polarization orientation and the second polarization orientation after the light exits the light pipe(para 0013 through 020).

Regarding claim 16, Kalmanash et al. discloses rotating the second polarization orientation to the first polarization orientation when the first light source is not emitting light, and wherein the first polarization orientation is the predetermined polarization orientation(para 0013 through 020).

Regarding claim 17, Kalmanash et al. discloses rotating the first polarization orientation to the second polarization orientation when the first light source is emitting light, and wherein the second polarization orientation is the predetermined polarization orientation(para 0013 through 020).

Regarding claim 19, Kalmanash et al. discloses in response to a signal from the sensor indicating a failure of the first light source, controls the second light source to be activated and the polarization rotator to be in a second rotation state(para 0013-0017).

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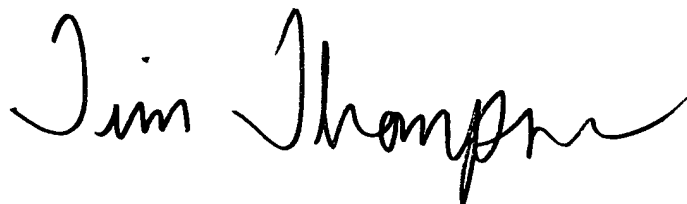
Regarding claim 20, Kalmanash et al. discloses positioning the first light source to emit light along a first light path; and positioning the second light source to emit light along a second light path, wherein the second light path is non-collinear with the first light path(fig 1).

Allowable Subject Matter

Claims 6, 12, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. With the allowable features being the light pipe having a first pair of internal surfaces orthogonal to the first polarization orientation and a second pair of internal surfaces orthogonal to the second polarization orientation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Thompson whose telephone number is (571) 272-2342. If the examiner can not be reached his supervisor, Georgia Epps, can be reached on (571) 272-2328.

A handwritten signature in black ink that reads "Tim Thompson". The signature is written in a cursive, flowing style.

T.J.T.

1/13/05

TIMOTHY THOMPSON
PRIMARY EXAMINER